CLAIM AMENDMENTS

1. (Previously Presented) A servo controller comprising:

a finite impulse response (FIR) filter unit for correcting a position instruction signal;

a mechanical characteristic compensation unit for attenuating components, each component having a predetermined frequency and corresponding to a characteristic of a target machine to be driven, and which are included in the position instruction signal corrected by said FIR filter unit, and computing a plurality of feed-forward signals respectively associated with position, speed, and torque of the target machine; and

a feedback compensation unit for driving the target machine according to the plurality of feed-forward signals respectively associated with the position, the speed, and the torque of the target machine and computed by said mechanical characteristic compensation unit.

2. (Previously Presented) The servo controller according to Claim 1, wherein said mechanical characteristic compensation unit comprises

a position instruction computation unit for attenuating a component having an antiresonance frequency of the target machine, and which is included in the position instruction signal, and computing the feed-forward signal associated with the position of the target machine,

a differentiator for differentiating the position instruction signal,

a speed instruction computation unit for attenuating a component having the antiresonance frequency of the target machine, and which is included in a value computed by said differentiator, and computing the feed-forward signal associated with the speed of the target machine,

a computation unit for differentiating the value computed by said differentiator to produce a differentiated value, and for multiplying the differentiated value by total inertia of the target machine, and

a torque instruction computation unit for attenuating a component having a resonance frequency of the target machine, and which is included in a value computed by said computation unit, and computing the feed-forward signal associated with the torque of said target machine.

3. (Currently Amended) The servo controller according to Claim 1, wherein said mechanical characteristic compensation unit comprises

a first-order delay filter for correcting the position instruction signal, said first-order delay filter having a time constant according to a damping constant, an antiresonance frequency, and inertia of a load of the target machine so that influence of attenuation characteristics of the target machine is reduced,

a position instruction computation unit for attenuating a component having the antiresonance frequency of the target machine and which is included in the position instruction signal corrected by said first-order delay filter, in consideration of the attenuation characteristics of the target machine, and computing the feed-forward signal associated with the position of the target machine,

a differentiator for differentiating the position instruction signal corrected by said first-order delay filter,

a speed instruction computation unit for attenuating a component having the antiresonance frequency of the target machine and which is included in the position instruction signal differentiated by said differentiator, in consideration of the attenuation characteristics of the target machine, and computing the feed-forward signal associated with the speed of the target machine,

a computation unit for differentiating a value computed by said differentiator ~~so~~ to produce a differentiated value, and for multiplying the differentiated value by total inertia of the target machine, and

a torque instruction computation unit for attenuating a component having a resonance frequency of the target machine, and which is included in a value computed by said computation unit, in consideration of the attenuation characteristics of the target machine,, and computing the feed-forward signal associated with the torque of the target machine.

4. (Previously Presented) The servo controller according to Claim 1, wherein said FIR filter unit includes at least two moving average filters, each moving average filter having a time constant based on requested path accuracy.

5. (Previously Presented) The servo controller according to Claim 1, wherein said mechanical characteristic compensation unit comprises an n*th*-order filter (n is an arbitrary natural number) for correcting the position instruction signal, said n*th*-order

filter cutting off a component having a desired frequency.

6. (Previously Presented) The servo controller according to Claim 1, further comprising a position instruction correction unit for correcting the position instruction signal so that influence of said FIR filter unit upon gain of said FIR filter unit itself is reduced.

7. (Previously Presented) The servo controller according to Claim 6, wherein said position instruction correction unit corrects the position instruction signal by adding to the position instruction signal a value, that is obtained by multiplying the position instruction signal, after differentiation, by a coefficient.

8. (Previously Presented) The servo controller according to Claim 1, further comprising

a simulated position control loop unit for computing a simulated speed signal according to both the feed-forward signal associated with the position of the target machine and the feed-forward signal associated with the speed of the target machine, which are computed by said mechanical characteristic compensation unit, and

a torque correction signal computation unit for computing a torque correction signal according to a change in sign of the simulated speed signal computed by said simulated position control loop unit when direction of rotation of the target machine is reversed, and for correcting the feed-forward signal associated with the torque of said target machine, and which is computed by said mechanical characteristic compensation unit, according to the torque correction signal.

9. (Previously Presented) A servo controller comprising:

a differentiator for differentiating a position instruction signal to compute a feed-forward signal associated with speed of a target machine to be driven;

a computation unit for differentiating a value computed by said differentiator to produce a differentiated value, and for multiplying the differentiated value by total inertia of the target machine;

a vibration reduction filter for attenuating a component having a resonance frequency of the target machine, and which is included in a value computed by said computation unit, and for amplifying a component having an antiresonance frequency of

the target machine, and which is included in the value computed by said computation unit, and computing a feed-forward signal associated with torque of the target machine; and

a feedback compensation unit for driving the target machine according to the position instruction signal, the feed-forward signal associated with the speed of the target machine and computed by said differentiator, and the feed-forward signal associated with the torque of the target machine and computed by said vibration reduction filter.

10. (Previously Presented) The servo controller according to Claim 9, further comprising a position instruction correction unit for correcting the position instruction signal so that influence of said differentiator upon a gain of said differentiator itself is reduced.

11. (Previously Presented) The servo controller according to Claim 10, wherein said position instruction correction unit corrects the position instruction signal by adding to the position instruction signal a value, that is obtained by multiplying the differentiated position instruction signal by a coefficient.

12. (Previously Presented) The servo controller according to Claim 9, further comprising

a simulated position control loop unit for computing a simulated speed signal according to both the feed-forward signal associated with the position of the target machine and the feed-forward signal associated with the speed of the target machine, and which are computed by said mechanical characteristic compensation unit, and

a torque correction signal computation unit for computing a torque correction signal according to a change in sign of the simulated speed signal computed by said simulated position control loop unit when direction of rotation of the target machine is reversed, and for correcting the feed-forward signal associated with the torque of said target machine, and which is computed by said mechanical characteristic compensation unit, according to the torque correction signal.